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MCNEES, WALLACE & NURICK LLC 100 PINE STREET P.O. BOX 1166 HARRISBURG, PA 17108-1166			SUCHECKI, KRISTYNA	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,833

Applicant(s)

ROTONDO ET AL.

Examiner

Krystyna Suchecki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/09/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the x-ray field plane and its relationship to the second x-ray imager as claimed in claims 2, 4, 5, 7 and 8 must be shown or the feature(s) canceled from the claim(s). The detachable connector of claim 14 should also be shown. No new matter should be entered.

2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is no antecedent for claim 8 to describe the “half the minimum useful height of the x-ray field” and its relationship to the film plane of a second x-ray imager. It is not clear how the film plane and x-ray imager are arranged with respect to the x-ray field. There is also no antecedent for the detachable connector of claim 14. The specification refers to rigid connections only.

4. The specification and drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification and/or drawings.

Claim Objections

5. Claims 2, 4-11, 14 and 16-23 are objected to because of the following informalities:

6. Claims 2, 4-11, 14, 16-18 and 20-23 are replete with errors and lack proper antecedent basis for certain limitations. Limitations are introduced using “the”, and are not introduced using “a” or “an.” Examples of improper introduction are “the x-ray field” and “the film plane”, both of which do not appear in claim 1. Claims 4-11, 14, 16-18 and 20-23 have similar errors.

7. Claims 5 and 8 are further objected to for misspelling “highth” or “height”.

8. Claim 8 is further objected to since the term “useful” does not convey a structural limitation.

9. Claim 14 is objected to for referencing a detachable connector, for which there is no antecedent to the specification or drawings.

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10. Claim 16 is further objected to for referencing “same data” instead of “image data.”

11. Claim ~~also~~ 17 has also not been properly punctuated with a period at the end and appears incomplete.

12. Claims 20, 22 and 23 also reference a “primary x-ray collimator”, though only a collimator is previously introduced. Appropriate correction is required.

13. Claims 18 and 20-23 also refer to “coherent” movements. This is an unconventional use of the term and Examiner suggests the use of a term such as “integral” or “coordinated”.

14. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19 is dependent upon itself. For examination purposes, it will be treated as being dependent upon Claim 18. Also, Claim 19 attempts to remove the claim limitation drawn to an alignment of a second x-ray imager without ever properly introducing a second x-ray imager. The removal of the limitation is improper, as is the lack of antecedent basis for the limitation. In order to claim the use of the first x-ray imager, a separate independent claim, or dependent claims written alternatively, should be constructed. For examination purposes, Claim 19 will be treated as having properly claimed the use of the first and second x-ray imagers in the alternative.

Claim Rejections - 35 USC § 112

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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16. Claims 2, 4, 5, 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claims 2, 4, 5, 7 and 8 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the specification. Applicant has stated that a digital x-ray imager replaces a conventional x-ray film thereby eliminating x-ray film from the present invention, and this statement indicates that the invention is different from what is defined in the claim(s) because the claims reference a film plane as part of the invention. Since the film has been removed, there is no structural relationship between the absent film and the imagers. The device may have an imaging plane, but this is not claimed nor described.

Claim Rejections - 35 USC § 102

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. Claims 1-10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Zeller (US 6,055,292).

19. Regarding Claims 1 and 16, Zeller teaches a dental x-ray diagnostic apparatus and method for operating same for performing real-time digital radiography of a patient skull (Figure 2), comprising:

a. a base frame to for supporting the apparatus (Figure 7 and Column 2, line 55, the incorporated reference corresponding to US 5,511,106);

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- b. a sliding frame which is capable of sliding vertically along the base frame which is operated by an independent actuator under microcomputer control (Figure 7);
- c. a rotary frame (Figure 7, "Rotary Unit") coupled to the sliding frame by a cinematic unit (2), and supporting an x-ray source (3) at one end, and an x-ray imager (8) at the other end;
- d. said cinematic unit, allowing execution of orbital movements of said x-ray source and said x-ray imager around the patient skull, characterized in that the orbital movement is composed of one rotation movement and two linear movements in a plane, driven by independent actuators controlled by data momentarily supplied from a microcomputer. (The cinematic elements are taught by Figure 7 of Zeller and by the incorporation of the reference above. US 5,511,106 additionally teaches the orbital movement (Column 3, lines 22-33) by showing the computer driven motors of the cinematic unit as having the orbital movement of EP 0 229 308, which corresponds to 4,811,372.)
- e. Image data is acquired by an x-ray imager, and digital processing of the image data for reconstruction of a diagnostic image also occurs (Column 5, lines 42-65).

20. Regarding Claim 2, Zeller teaches the apparatus as set forth in claim 1 wherein the x-ray imager (18) has a linear shaped active area of a size approximately corresponding to the x-ray (17) field size at the film plane (Figure 2).

21. Regarding Claim 3, Zeller teaches an apparatus as in claim 1, further comprising a second x-ray imager (Figure 2, item 18').

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22. Regarding Claim 4, Zeller teaches the apparatus as set forth in claim 3, wherein said second x-ray imager (18') has an active area of a size approximately corresponding to the minimum useful x-ray (17') field size at the film plane (Figure 2).

23. Regarding Claim 5, Zeller teaches the apparatus as set forth in claim 3 wherein said second x-ray imager is associated with a horizontal scanning movement (Figure 1, rotation arrow), and has a linearly shaped active area of a length approximately corresponding to the minimum useful height of the x-ray field size at the film plane (Figure 3).

24. Regarding Claim 6, Figure 2 of Zeller teaches the apparatus as set forth in claim 3 wherein said second x-ray imager (18') is associated with a horizontal scanning movement, and is provided with an independent active actuator (9) capable of performing the linear translation of said second x-ray imager during the scanning movement under computer control.

25. Regarding Claim 7, Figure Zeller teaches the apparatus as set forth in claim 3, wherein said second x-ray imager (18') is associated with a vertical scanning movement (Column 3, lines 7-38), and has a linearly shaped active area of a length approximately corresponding to the minimum useful width of the x-ray field size at the film plane (Figure 2).

26. Regarding Claim 8, Zeller teaches the apparatus as set forth in claim 3, wherein said second x-ray imager (18') is associated with a rotational scanning movement, and has a linearly shaped active area of a length approximately corresponding to the half the minimum useful height of the x-ray field (17, 17') at the film plane (Figures 2 and 5).

27. Regarding Claim 9, Figures 2 and 7 of Zeller teach the apparatus as set forth in claim 3, wherein said second x-ray imager (18') is associated with a vertical, or horizontal, or rotational scanning movement (Column 3, lines 7-38), and the x-ray beam is collimated by a collimator

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(15) intercepting the x-ray beam before the patient and in proximity of the patient, which is provided with an independent active actuator (14) capable of performing the linear or rotational translation of the same secondary collimator during a scanning movement under computer control (29).

28. Regarding Claim 10, Zeller teaches the apparatus as set forth in claim 1, comprising a primary collimator (15) operated by independent active actuators under microcomputer (29) control, allowing resizing of the x-ray field to any desired format required for the chosen radiographic modality as well as the translation of the same x-ray field during a vertical or horizontal or rotational scanning process (Column 6, lines 38-45).

29. Claims 17, 20, 22 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Doebert.

30. Regarding claim 17, Doebert teaches a method for operating a dental x-ray diagnostic apparatus performing real- time digital radiography in Cephalography, comprising the steps of: aligning the x-ray source with the x-ray imager, either manually or automatically (Column 3, lines 36-47); positioning the patient by the relevant patient positioning system (Column 3, lines 16-21); irradiating the patient skull (Column 8, lines 59-63).

31. Regarding Claim 20, Doebert teaches, as above for claim 17, a method for operating a dental x-ray diagnostic apparatus performing real- time digital radiography in Cephalography, and further teaches the steps of: setting a collimator format for a narrow x-ray beam laying in a vertical plane (Column 6, lines 20-27); starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a horizontal (Y) direction by a coherent horizontal

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movement of the primary x-ray collimator and the x-ray imager under computer control (Column 6, lines 28-51 and Figure 7, item 40); and, performing acquisition of the image data by the x-ray imager, and computer processing (Column 9, lines 8-13) for the reconstruction of the diagnostic image.

32. Regarding claims 22 and 23, Doebert teaches, as above for claims 17 and 20, a method for operating a dental x-ray diagnostic apparatus performing real- time digital radiography in Cephalography, and further teaches the steps of: setting a collimator format for a narrow x-ray beam laying in a horizontal plane; and starting a scanning process during which the x-ray beam is linearly translated through a patient skull in a vertical (V) direction by a coherent horizontal movement of the primary x-ray collimator and the x-ray imager under computer control (Column 5, line 36-Column 6, line 8).

Claim Rejections - 35 USC § 103

33. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

34. Claims 11, 14, 15, and are rejected under 35 U.S.C. 103(a) as being unpatentable over Zeller in view of Doebert (US 5,511,106).

35. Regarding Claims 11, 14, 15, Zeller teaches a computer tomography apparatus and method as above for claims 1 and 3. A panoramic device is modified for a transverse scanning system (Column 2, line 55, corresponding to US 5,511,106) and contains a panel with first and second x-ray imagers (18, 18').

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36. Zeller fails to expressly incorporate the Cephalographic features of the device such that the device has a mechanism providing relocation of said second x-ray imager selectively between the Cephalographic and the Panoramic position wherein such mechanism comprises a detachable connector allowing in a secure and ergonomic way the manual connection and disconnection of the x-ray imager selectively between the Cephalographic and the Panoramic position. Zeller does not expressly incorporate the patient positioning system used in Cephalography as provided with independent active actuators by which it can be translated relative to its support frame in order to maintain a firm patient position during a horizontal or vertical scanning process where the movement of the same support frame is involved.

37. However, Doeberl teaches a device that is selectable between a Cephalographic and the Panoramic position and that has a detachable mechanism to provide relocation of an x-ray imager panel allowing secure and ergonomic connection and disconnection of the x-ray imager selectively between the Cephalographic and the Panoramic position. The connection allows the panel to be lengthened or shortened dependent upon the type of exposure (Column 5, line 1-18). A micro processor (40) controls active actuators (drive motors D1, D3) to maintain a firm patient position during a horizontal or vertical scanning process where the movement of the same support frame is involved. The control assures that the patient skull position remains constant (Column 5, line 36-Column 6, line 8). The advantages of including as many functions as is possible in to a single device is also taught in Doeberl. By allowing functions such as cephalography and panoramic exposures in a single device, the outlay of the device is minimized while increasing only the peripheral equipment for the device (Column 2, lines 12-38).

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38. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a cephalographic function in the panoramic and transversal device of Zeller, since the inclusion minimizes outlay (Doebert, Column 2, lines 12-38). The inclusion of a mechanism or detachable mechanism to allow transition between cephalographic and panoramic positions would allow an x-ray imager to be lengthened or shortened dependent upon the type of exposure (Doebert, Column 5, line 1-18). Active actuators under control would assure that the patient skull position remains constant (Doebert, Column 5, line 36-Column 6, line 8).

39. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zeller and Doebert as applied to claim 11 above, and further in view of Fairleigh (US 5,997,176).

40. Regarding Claims 12 and 13, Zeller and Doebert teach an apparatus as above in claim 11 as well as the use of a microcomputer (Zeller, 29) for control upon user command. An arm (Doebert, 6) can be used to provide relocation of parts.

41. Zeller and Doebert fail to teach a mechanism comprising a telescopic arm or a folding arm for providing relocation either manually or automatically by an independent actuator under microcomputer control upon user command.

42. Fairleigh teaches the automated movement of a telescopic or folding (Column 3, lines 3-7) arm by an independent actuator (hydraulic cylinders) to provide relocation of an imager selectively between cephalographic and panoramic positions (Column 8, lines 42-56, Column 12, lines 26-37). The arm is used in a system with a processing system (Column 13, line 55- Column 14, line 11). The folding arms provide a panoramic system with repeatability and a

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cephalographic system with repeatability and versatile positioning (Column 2, lines 46-67 and Column 3, lines 23-36).

43. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the telescopic and folding arms controlled by an independent actuator under automatic control in the system of Zeller and Doeberth for the purpose of providing a system with panoramic repeatability and a cephalographic repeatability and versatile positioning (Fairleigh, Column 2, lines 46-67 and Column 3, lines 23-36). The automatic control of Fairleigh's arm could be achieved by the microprocessor of Zeller in order to allow a central location for control components.

44. Claims 18, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doeberth in view of Doeberth (US 6,570,953).

45. Regarding Claims 18 and 21, similarly to claims 20 and 22 above, Doeberth teaches a method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography. The cephalograms are tomosynthetically produced (Doeberth, Column 8, lines 55-58) and Doeberth provides for the correction of image distortions (Column 9, lines 8-13).

46. Doeberth does not include correction of the magnification distortion in the horizontal direction.

47. Doeberth teaches magnification distortion correction of tomosynthetically produced images. The relationship between a detector and a source are tracked so that the rigidity of the requirements of the parts with respect to one another can be relaxed (Column 2). The image is

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then reconstructed using magnification distortion correction so that variations during the scan are accounted for (Column 6, lines 6-33) and so that blur-free recording are obtained (Column 3, lines 4-6).

48. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the magnification distortion correction of Dobert in the system of Doeber, since the correction can account for variations of the magnification during the scan (Dobert, Column 6, lines 6-33) so that blur-free recording are obtained (Dobert, Column 3, lines 4-6).

49. Regarding Claim 19, as above Doeber and Dobert teach relocating, either manually or automatically, a first or second x-ray imager (18) to a position aligned with an x-ray source for Cephalography (Doeber, Column 4, lines 51-67).

Conclusion

50. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (571) 272-2495. The examiner can normally be reached on M-F, 9-5.

51. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

52. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Craig E. Church
Primary Examiner